What is claimed is:

- 1. A method of detecting antibodies in a solution comprising:
- a) contacting the solution with an antigen-coated surface of a sensor chip under conditions that permit anti-antigen antibodies to bind to the antigen coating;
- b) detecting the change in surface plasmon resonance signal of the sensor chip resulting from the anti-antigen antibodies binding to the antigen coating.
- 2. The method of claim 1, wherein the antigen is a glycolipid.
 - 3. The method of claim 1, wherein the anti-antigen antibodies are anti-glycolipid antibodies.
- 20 4. The method of claim 1, wherein the antigen is a ganglioside and wherein the antibody is an antiganglioside antibody.
- 5. The method of claim 3, wherein the solution contains anti-glycolipid antibodies that bind to the glycolipid-coated surface of the sensor chip and alter the surface plasmon resonance.
- 6. The method of claim 1, wherein a control surface plasmon resonance value is subtracted from the surface plasmon resonance signal.
- 7. The method of claim 6, wherein the control surface plasmon resonance value comprises the signal detected from the surface of the sensor chip coated with a selected control antigen, wherein the chip is also

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alternatively exposed to the solution being evaluated for anti-antigen antibodies.

- 8. The method of claim 7, wherein the control antigen is a glycolipid.
 - 9. The method of claim 8, wherein the control antigen is Ganglioside GM2.
- 10 10. The method of claim 1, wherein the surface plasmon resonance signal is detected from the surface of the sensor chip coated with ganglioside GM1.
- 11. The method of claim 1, wherein the sensor chip comprises a glass slide coated with a gold film covalently linked to a methyl dextran layer.
 - 12. The method of claim 1, wherein the surface plasmon resonance signal is detected using an optical detector.
 - 13. The method of claim 1, wherein the solution is human blood or a derivative of human blood.
- 14. The method of claim 1, wherein the solution is human 25 sera.
 - 15. The method of claim 3, wherein the anti-glycolipid antibody is an Immunoglobulin G.
- 30 16. The method of claim 3, wherein the anti-glycolipid antibody is an Immunoglobulin M.
 - 17. The method of claim 15 or 16, wherein the antiglycolipid antibody is an anti-ganglioside antibody.
 - 18. The method of claim 16 or 17, wherein the antibody is

human.

- 19. A method of determining the anti-glycolipid antibody isotype present in the solution comprising the method of claim 2 wherein the tested solution is washed from the surface of the sensor chip and a second solution containing a secondary antibody is introduced to the surface.
- 10 20. A method of increasing the optical signal size of claim 1, comprising washing the tested solution from the surface of the sensor chip and applying a second solution containing the secondary antibody to the surface.
 - 21. The method of claim 19, wherein the secondary antibody is an anti-Immunoglobulin G.
- 22. The method of claim 19, wherein the secondary antibody is an anti-Immunoglobulin M.
 - 23. The method of claim 1, wherein the method is used to diagnose a disease in a subject.
- 25 24. The method of claim 6, wherein the method is used to quantitate levels of antibodies in a subject.
 - 25. The method of claim 23, wherein the disease is neurological.
 - 26. The method of claim 23, wherein the disease is Guillian-Barré syndrome, motor neuropathy, peripheral neuropathy or an autoimmune neuropathy.

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